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Application of a high crude protein milk replacer in practical calf rearing

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Background:

The successful and performance-orientated calf rearing requires an intensive feeding regime following a consistent colostrum supply (Hammon et al., 2019).

Assuming that the performance of growing calves is measured in the development of functional tissues (udder, reproduction, etc.), a high feeding intensity plays a particularly important role in the development of the udder parenchyma (Soberon and Van Amburgh, 2017).

Continuous adjustments to the supply recommendations show that genomic breeding progress requires higher crude protein contents with simultaneously increased quantities of feed (NASEM, 2021; LfL, 2023).

Material und Methods:

- The selection of dams for breeding is based purely on genomic breeding value. Only animals with the best breeding value are used for remounting.
- Analysable regular weighing data from 84 calves.
- Rearing 14 days in double boxes with classic teat bucket with a soft teat.
- Later rearing in group housing up to 7 animals on a milk bar with a special teat with increased resistance and an animal feed space ratio < 1.
- Twice daily controlled full feeding with a total of 11 litres or 1,500 g of milk replacer per calf and day.
- The drinking phase lasted 12 weeks, with weaning taking place in the last 4 weeks.
- The live weight of all calves was recorded at regular intervals.

Table 1: The nutritional values in the milk replacers.

	Control	**BEWI-MILK®** AM 5
Crude protein (g/kg)	225	250
Crude fat (g/kg)	180	170
Energy content (MJ ME/kg)	18.3	18.2
Skimmed milk content (%)	60	55

Results:

- The animals in the test group had **+ 66 g** higher average daily weight gains in the first 14 weeks of life (milk phase) (see Figure 2).
- The animals in the test group had an average final weight that was **+ 10 kg** higher at the end of the 14th week of life.
- A **high level of health** prevailed in both test groups over the test period.
- The animals‘ faeces were subjectively assessed, in some cases softer than usual. This observation is known from other studies with high levels of milk replacer.
- The calves were **able to ingest the high quantities of milk replacer**. All animals appeared to be saturated.

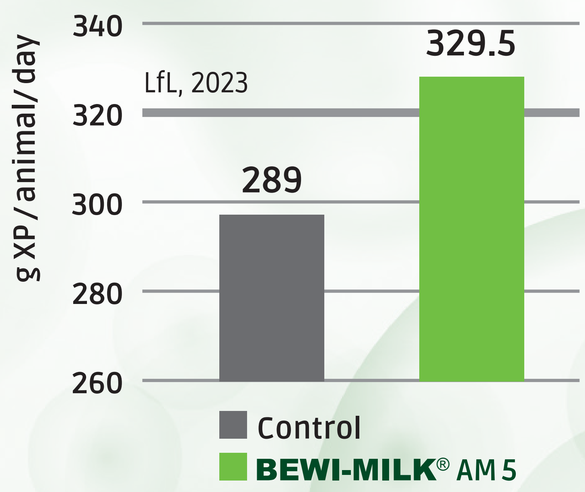

Figure 1: The crude protein supply of calves with covered energy requirements.

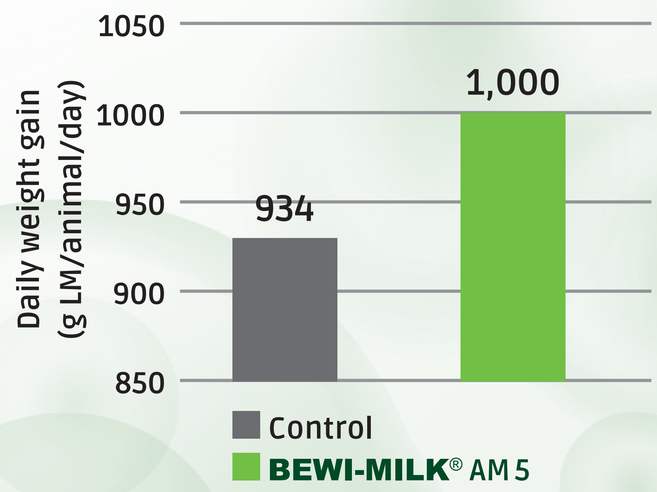

Figure 2: The average daily weight gain of the calves up to 14 weeks of age.

Conclusion:

Calves with a high genetic performance level are able to consume even higher quantities of milk replacer than previously described in the supply recommendations. „Controlled full feeding“ is not necessarily inferior to ad libitum feeding.

The use of high crude protein concentrations in the milk replacer in combination with high feed quantities leads to an increase in daily weight gain during the feeding phase.

A high crude protein concentration in the milk replacer allows calves with a high genetic performance level to be provided with the required crude protein quantities, which promote the conversion of daily gains into functional tissue and reduce the excessive build-up of fat deposits.

Literature:

Hammon, H. M., Liermann, W., Frieten, D., Koch, C. (2019): Review: Importance of colostrum supply and milk feeding intensity on gastrointestinal and systemic development in calves. Veröffentlicht in: Animal (14, 1), S. 133-143.

LfL (2023): Gruber Tabelle zur Fütterung der Milchkühe Zuchtrinder Schafe Ziegen. 48. Veränderte Auflage. LfL Information, S. 13.

NASEM (2021): Nutrient Requirements of Dairy Cattle. 8. überarbeitete Auflage. The National Academy Press, Washington, D.C.

Soberon, F., Van Amburgh, M. E. (2017): Effects of preweaning nutrient intake in the developing mammary parenchymal tissue. Veröffentlicht in: Journal of Dairy Science (100), S. 4996-5004.

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